

WHAT IS CLAIMED IS:

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1. A method for performing wireless link adaptation in a retransmission environment comprising the steps of:
 - (a) determining a threshold value corresponding to each of at least one link adaptation modes using a retransmission model;
 - (b) measuring a signal quality value at a receiver;
 - (c) selecting a best link adaptation mode by comparing the signal quality value to the threshold value corresponding to each of the at least one link adaptation modes; and
 - (d) adjusting at least one of a modulation scheme and a coding scheme based upon the best link adaptation mode.
2. The method according to claim 1, wherein the step of determining a threshold value corresponding to each of at least one link adaptation modes further includes the steps of for each retransmission mode, determining a corresponding throughput function using at least a radio interference rate value and a block error rate value.
3. The method according to claim 2, wherein the block error rate value is a function of a SIR variable for the retransmission environment and further including the step of for each link adaptation mode, determining a corresponding range of SIR values for which a corresponding throughput function has a maximum value among the throughput functions corresponding to each of the at least one link adaptation modes.
4. The method according to claim 1, further including the step of if the signal quality value is less than a no-transmission threshold value, ceasing transmission until the signal quality value exceeds the no-transmission threshold value.
5. The method according to claim 1, wherein the signal quality value is one of a signal to interference ratio (SIR) and a block error rate (BLER).

Sub 317

6. The method according to claim 1, wherein each of the at least one link adaptation modes is a link adaptation mode supported by the Enhanced Data Rates for GSM Evolution (EDGE) specification.

7. The method according to claim 1, wherein the retransmission environment is modeled using a wireless transmission model that includes at least one retransmission.

Sub 317

8. A method for performing wireless transmissions comprising the steps of:

(a) measuring a signal quality value at a receiver;

(b) determining whether the signal quality value is less than a no-transmission threshold;

(c) if the signal quality value is less than the no-transmission threshold, ceasing transmission; and

(d) if the signal quality value exceeds the no-transmission threshold, performing link adaptation.

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Sub 317

9. The method according to claim 8, wherein the no-transmission threshold is a SIR value below which a wireless transmission system is unstable.

10. The method according to claim 8, wherein the no-transmission threshold is a SIR value below which substantially zero throughput will occur at a link receiver.

11. The method according to claim 8, wherein the signal quality value is one of a SIR and a BLER.

12. The method according to claim 8, wherein the step of performing link adaptation further includes the steps of:

(a) selecting a best link adaptation mode by comparing the signal quality value to a threshold value corresponding to each of at least one link adaptation modes; and

(b) adjusting at least one of a modulation scheme and a coding scheme based upon the best link adaptation mode.

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Sub #12

13. A method for calculating a threshold value for each of at least one link adaptation modes in a retransmission environment comprising the steps of:
 - (a) for each of the at least one link adaptation modes, calculating a performance criteria function using at least one parameter;
 - (b) for each of the at least one link adaptation modes, determining a range of signal quality values for which the performance criteria function is maximized.
14. The method according to claim 13, wherein the performance criteria function is a throughput function that is dependent upon at least one of a radio interference rate value and a block error rate value.
15. The method according to claim 13, wherein the signal quality value is one of a SIR and a BLER.
16. A wireless communication system comprising:
 - at least one wireless receiver, wherein each of the at least one wireless receiver further includes:
 - a transceiver;
 - an antenna;
 - at least one wireless transmitter, wherein each of the at least one wireless transmitter further includes:
 - a transceiver;
 - an antenna;
 - a processor, wherein the processor is adapted to:

(a) determine whether a signal quality value for a current receiver is less than a no-transmission threshold;

(b) if the signal quality value is less than the no-transmission threshold, cease transmission to the current receiver; and

(c) if the signal quality value exceeds the no-transmission threshold, perform link adaptation.

sub 317
17. The wireless communications system according to claim 16, wherein the processor is further adapted to:

(a) select a best link adaptation mode by comparing the signal quality value to a threshold value corresponding to each of at least one link adaptation modes; and

(b) adjust at least one of a modulation scheme and a coding scheme based upon the best link adaptation mode.

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